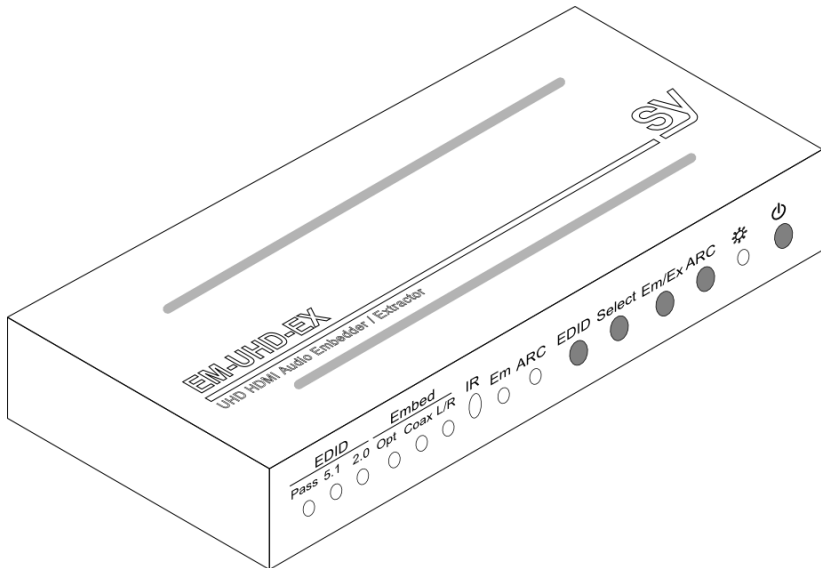


Installation Guide

SY-EM-UHD-EX

4K UHD HDMI Audio Embedder / Extractor with ARC



The SY-EM-UDH-EX audio embedder and extractor is an extremely versatile device, providing a means to either embed another audio signal onto the HDMI output or extract HDMI audio signals from the HDMI input. Three audio interface connections (Optical Toslink, digital Coax, and stereo L/R) are employed, ensuring a convenient interface to any sound system.

The L/R and Coaxial audio signal ports can be set to either input (embed) or output (extract) mode. The embedded audio can be selected from one of the three input types: optical, digital coax or stereo analogue.

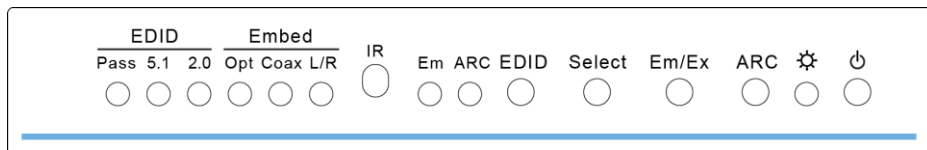
The simultaneous audio outputs can be either from the ARC channel or the audio extracted from the incoming HDMI. Supported audio formats include 2 channel LPCM, Dolby AC3, and DTS.

Features

- Can be set to either Embed or Extract audio signals to or from HDMI
- Supports three audio signal types: optical, digital coax or stereo analogue L/R
- Supports all resolutions to 4K UHD HDMI video
- HDCP 1.4 and ARC supported
- Selectable audio input for audio embedding mode
- Simultaneous Extracted audio to: optical Toslink, digital coax S/PDIF and L+R analogue
- Last operating state (settings) is maintained when repowered

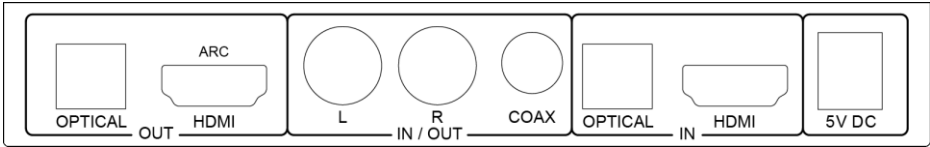
Panel Description

Front Panel



Name	Description
EDID - Pass	EDID pass-through mode
EDID - 5.1	EDID set for 5.1ch sound mode
EDID - 2.0	EDID set for 2ch stereo mode
Embed - Opt	Embed audio from optical S/PDIF input onto HDMI out
Embed - Coax	Embed audio from digital Coax input onto HDMI out
Embed - L/R	Embed audio from Analogue L/R input onto HDMI out
IR	IR Sensor (for remote control)
Em	Lit: Audio Embed mode - Not lit: Audio Extract (de-embed) mode
ARC	Lit: ARC channel audio to all three outputs
EDID	EDID mode selection button (Pass, 5.1, 2.0)
Select	Audio embedding, source selection button (Optical, Coax, L/R)
Em/Ex	Embed or Extract (de-embed) mode button
ARC (Button)	ARC select button
Power (LED)	Lit: Standby mode
Power (Button)	Power ON / Standby button

Rear Panel



Name	Description
OPTICAL OUT	Toslink Optical output connector (F05)
HDMI OUT	HDMI output with Audio Return Channel (ARC)
L (IN/OUT)	Left analogue audio input (embed) or output (extract)
R (IN/OUT)	Right analogue audio input (embed) or output (extract)
COAX (IN/OUT)	Digital Coaxial S/PDIF input (embed) or output (extract)
OPTICAL IN	Toslink Optical input connector (F05)
HDMI IN	HDMI input
5V DC	5V DC power supply input

Using the SY-EM-UHD-EX

Connect the SY-EM-UHD-EX to your system as required.

The operational mode can be set up, using the front panel buttons as below:

Control Buttons

The **Em/Ex** button toggles the unit between the Embedding and Extraction modes.

When in Audio Extraction mode (and ARC set to OFF), the audio is extracted and outputted simultaneously to all 3 audio outputs (analogue L/R only when LPCM 2.0 available).

When in Audio Embedding mode, the **Select** button selects which audio input source is embedded onto the HDMI output signal.

Em LED	Operating Mode
ON	Audio Embedding activated Use Select button to choose one of the audio input sources (Optical, Coax or L/R)
OFF	Audio Extraction (de-embed) to all audio outputs (Optical, Coax, L/R) When ARC LED is OFF, audio outputs Extracted (de-embed) from HDMI input When ARC LED is ON, audio outputs are from the ARC signal (HDMI output)

The EDID button selects the EDID mode for the digital audio data:

EDID LED	Operating Mode
Pass	The CEA audio data of the display device EDID defines the digital audio mode
5.1	The digital audio EDID is set to 5.1ch (6ch surround-sound)
2.0	The digital audio EDID is set to 2ch (stereo audio only)

Only the audio section of the display EDID is set as required. The Video section of the display EDID is unaffected and simply passed through.

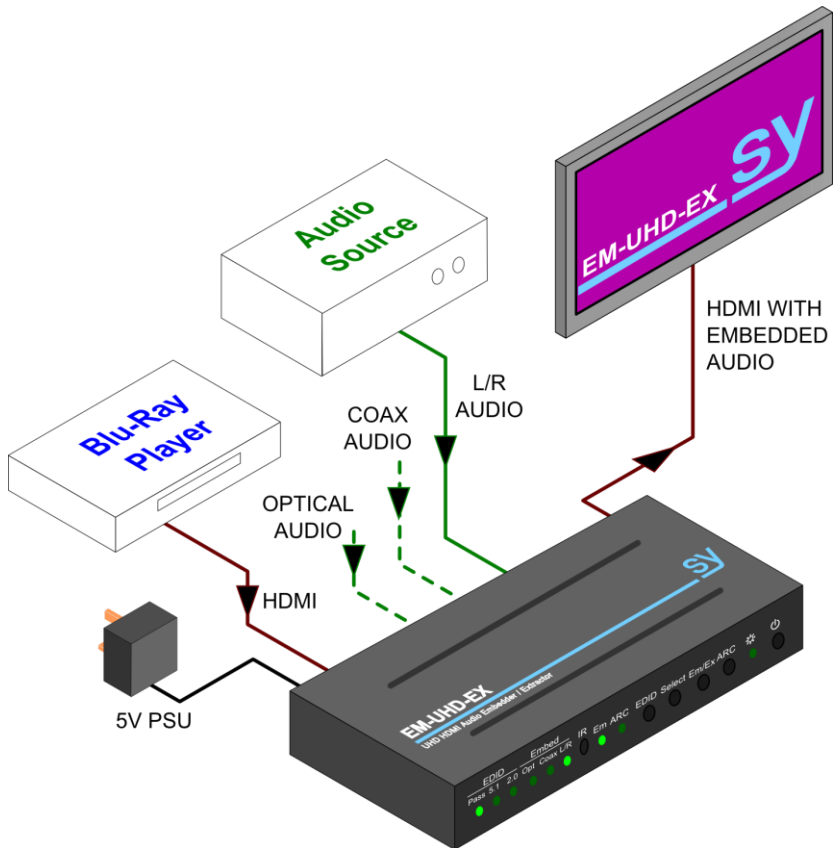
System Connection

Audio Embedding

Simply connect the SY-EM-UHD-EX between the HDMI source and the HDMI display.

Using the **ARC** and **Em/Ex** buttons, set to ARC OFF and Em ON – Embedding enabled.

Select the required audio source (Optical, digital Coax, L/R) using the **Select** Button.



Audio Extracting

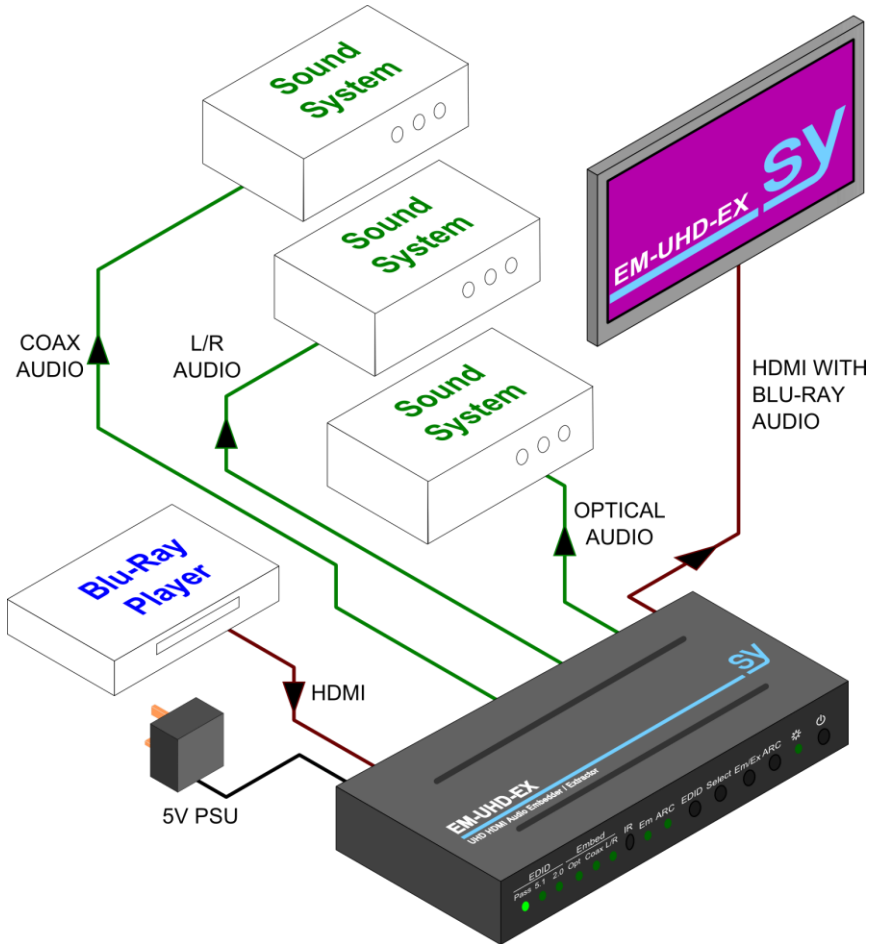
Connect the SY-EM-UHD-EX between the HDMI source and the HDMI display.

Using the **ARC** and **Em/Ex** buttons, set to ARC OFF and Em OFF – Extraction activated.

All three outputs (Optical, Digital Coax, and L/R) simultaneously output the de-embedded signal (extracted from the HDMI input).

Note: When set to ARC ON, then ARC audio is presented to all the outputs.

Please ensure that CEC is active for source and display CEC is active.



Specifications

Connectors	
Video Input	HDMI female (Type A) – Up to 8m, using 26 AWG HDMI cable
Video Output	HDMI female (Type A) – Up to 8m, using 26 AWG HDMI cable
Optical Audio Input	S/PDIF fibre connector
Optical Audio Output	S/PDIF fibre connector
Coax Digital Audio	RCA phono (input or output)
Analogue Audio	2 x RCA phono (stereo L/R input or output)
5V DC	2.1 mm power jack

Video General	
HDMI Spec	HDMI 1.4
HDCP Spec	HDCP 1.4
Video Rate	9GHz (300MHz pixel clock)
Video Resolutions	4K UHD (3840x2160p) @60Hz 4:2:0 24bit / @30Hz 4:4:4 24bit 4K HDR @24Hz 4:2:0 10bit BT.2020 All resolutions from 480i to 1080p @60Hz 4:4:4 36bit

Controls	
Em/Ex	Switches between Embedding or Extraction modes
Select	To select the audio source input (with ARC LED off) when the audio embedding is enabled
ARC	Enable / disable audio extraction from the HDMI Output ARC
EDID	Selects the EDID mode (pass, 5.1 or stereo 2.0)
Power	Toggle power mode of the SY-EM-UHD-EX (ON / OFF)
IR	IR remote control for setting up the unit

Audio General	
HDMI Audio Formats	Dolby true HD, Dolby AC3, DSD, DTS, DTS-HD, LPCM7.1
Optical Audio Formats	LPCM 2ch, 5.1ch, Dolby AC3, DTS - (Max BW: 25 MHz)
L/R Audio Format	Analogue stereo 2ch
L/R Audio Level	2V pk-pk Max. (0.7V RMS)
Digital audio sampling	Out: 32kHz, 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz In: 32kHz, 44.1kHz, 48kHz, 88.2kHz, 96kHz

General	
PSU	5V DC @ 1A
Power Consumption	2.5W max
Dimension (W*H*D)	205 x 26 x 74 mm
Weight	365 g
Temperature	0 ~ 45°C
Humidity	10% ~ 90% RH (non-condensing)

Safety Instructions

To ensure reliable operation of these products as well as protecting the safety of any person using or handling these devices while powered, please observe the following instructions.

1. ONLY use the power supplies provided. Alternate supply may cause damage - Please check Voltage, polarity and that it has sufficient power to supply the device it is connected to.
2. Do not operate these products outside the specified temperature and humidity range given in the above specifications.
3. Ensure there is adequate ventilation, as these products generate heat while operating.
4. Repair of the equipment should only be carried out by qualified professionals as these products contain sensitive devices that may be damaged by any mistreatment.
5. Only use these products indoors and in a dry environment. Do not allow any liquids or harmful chemicals to come into contact with these products.

After Sales Service

1. Should you experience any problems while using these products, firstly refer to the Troubleshooting section in this manual before contacting SY Technical Support.
2. When calling SY Technical Support, the following information should be provided:
 - Product name and model number
 - Product serial number
 - Details of the fault and any conditions under which the fault occurs.
3. These products have a two year standard warranty, beginning from the date of purchase as stated on the sales invoice. For full details please refer to our Terms and Conditions.
4. SY Product warranty is automatically void under any of the following conditions:
 - The product is already outside of its warranty period
 - Damage to the product due to incorrect usage or storage
 - Damage caused by unauthorised repairs
 - Damage caused by accident or mistreatment of the product
5. Please direct any questions or problems you may have to your local dealer before contacting SY Electronics.

NOTES: